Federal Aviation Administration
Alaskan Region

Capstone Program Management Office
801 B Street, Suite 500
Anchorage Alaska 99501

Capstone Quarterly Report

4th Quarter FY99

July - September 1999

ALASKAN REGION

Capstone

Investment in Safety

Capstone To Date

Several major milestones toward our goal of improving aviation safety and efficiency by putting cost effective, new technology avionics equipment into commercially operated aircraft in the Yukon-Kuskokwim delta region have been accomplished during the fourth quarter.

One of the most significant was the Capstone avionics demonstration in Bethel, Alaska on August 23rd, 24th and 25th. Using a company-owned Beechcraft King Air airplane and a specially equipped Cessna Model 208 Caravan furnished by PenAir, UPS AT demonstrated its proposed Global Positioning System (GPS) navigation unit, multi-function cockpit display (MFD), and datalink radio system would meet FAA performance specifications for the Capstone Program. The ADS-B aircraft position reports generated in Bethel during the contract demonstration was transmitted to the Anchorage ARTCC and processed by the Capstone Server and Micro-EARTS and displayed at a controller's station. In addition pseudo TIS and FIS information was uploaded to the participation aircraft.

One day was spent demonstrating the Capstone equipment and its capabilities to several of the Bethel commercial operators and pilots. All were impressed by the enhanced situational awareness that the Capstone equipment provided.

The Contracting Officer and Certification Technical Representative analyzed the equipment performance data generated during the demonstration. A determination was made that FAA specifications were met and a contract was awarded on September 13th. The contract was for Capstone avionics systems, installation kits, terrain databases, ground-based transceivers, an avionics training simulator and training assistance.

Some additional highlights of the past quarter were:

- The University of Alaska has been contracted to deliver a pilot training program for the Capstone equipment and to conduct an independent analysis of safety improvements

- A Micro-EARTS program review at Anchorage ARTCC was completed during July. The Capstone modification to show ADS-B equipped aircraft on controller displays was discussed with Lockheed Martin representatives along with other software improvements. It will take about one year of testing before the ADS-B service can be certified for air traffic management functions.

- The Mitre Corporation software was successfully loaded into the Capstone computer equipment at Anchorage ARTCC. The program was used to demonstrate ground server operations during the Bethel demonstration.

- A Sun Enterprise 250 computer has been purchased for the Capstone Server. This computer will be installed in the future at the Anchorage ARTCC to operate the Mitre Corporation's software design to manage Capstone's data link message traffic. Other components purchased include two Cisco routers, cables, and four CSU/DSU modems which will comprise the communications link between the Capstone Ground Station in

Bethel, the ANICS system, Anchorage ARTCC, and the Capstone Server.

- Robert Wright, Manager, and other personnel from the Flight Technologies and Procedures Division, AFS-400, met with Capstone personnel in Alaska during the week of July 20th to begin development of operational procedures which will be made possible by Capstone. Bob spoke with many of the Bethel operators concerning their needs and air carrier pilots were asked to participate in a work group to help define the most needed improvements.

- A draft "Capstone Program Agreement" has been approved by our Regional Counsel's office and is being coordinated with the Alaska Air Carriers Association. This agreement between FAA and each participating aircraft owner will document terms of the Capstone Program and address such topics as equipment ownership, installation, maintenance, pilot training, minimum equipment list status, flight information services, and ultimate disposition of the avionics.

- A proto-type facility for the Capstone automated weather observation equipment was constructed at the ANI Anchorage Complex. An "open house" was held at the Lake Hood property to inspect and "kick the tires" on the new weather station enclosure on Friday, September 10th.

- The Capstone office received a copy of each of the national Flight Information Services contracts recently awarded in headquarters. We will be examining the products and services offered by these vendors to determine which might be suitable for the commercial operators in the Capstone service area.

- The Capstone office participated in a joint Capstone/Safe Flight 21/UPS AT display booth at the Experimental Aircraft Association's (EAA) Air Adventure 99 at Oshkosh WI. Visitors to the booth included FAA Administrator Jane Garvey, Acting Deputy Administrator Monty Belger, and DOT Secretary Rodney Slater. United Parcel Service Aviation Technologies furnished an avionics demonstrator unit, which provided the visitors with hands-on experience operating the GPS and multi-function display.

- A draft statement of work for development of a Capstone Program documentary and a public service video has been completed. These videos will help to explain the program to people in the aviation industry as well as the general public who will be served as they travel on commercial aircraft through the Capstone service area.

- Representatives of the Capstone Program Office participated in the Cargo Airlines Association's Ohio Valley Data Link demonstration July 9 – 11. From all reports, the demo seems to have been a major success. Avionics and ground data link transceivers were manufactured by UPS Aviation Technologies, the vendor down-selected to demonstrate Capstone Avionics.

- Capstone's John Hallinan and James Call met with Jim McDaniel, AND-720, and Chris Eberhard, Communiquest, at the Salt Lake City FSDO on July 14 to review the Capstone Program and discuss the possible application of

Capstone technology for use during the next winter Olympics.

- Working with industry continues. Members of the Capstone team are meeting monthly with the Bethel commercial operators in round table discussion meetings. The meetings serve as an information exchange program. In addition to the regularly scheduled Industry Council meetings some of the other meetings that were conducted during the forth quarter are:

  1. On July 9, a Capstone Program briefing was conducted for the U.S. Air Force joint radar operations representatives. The briefing was requested during the last Joint Radar Planning Group meeting. Another Capstone briefing will be scheduled at a later date for Air Force maintenance personnel.

  2. During the EAA Air Adventures 99 Fly-In, Capstone personnel gave a briefing to the President of NAV Radio. FAA recently selected NAV Radio and ARNAV as national Flight Information Services (FIS) vendors.

  3. On August 16, a briefing was conducted for the 11th Air Force and Lockheed Martin contract representatives on the program. The Air Force is interested in the potential application of Capstone's ADS-B technology to improve the safety of its operations during exercises in the special use airspace of northeast Alaska.
  4. On August 30th, Capstone Program representatives briefed Northern Air Cargo, a Part 121 cargo operator. There were discussions on the compatibility of existing avionics and what additional equipment would be required for their DC-6 aircraft to participate.

On September 20-22, Capstone Program representatives attended a joint FAA/industry/user offsite conference in McLean, Virginia. The meeting focused on the nine high priority operational enhancements recommended by RTCA.

On September 30 a consolidated Capstone Program planning meeting with Lockheed Martin, Mitre, Safe Flight 21 and UPS AT representatives was held at Salem Oregon. Numerous Capstone development issues were discussed, to include architecture, spectrum, and technical issues. Action items were identified, with planned completion dates and Offices of Primary Interest (OPIs) assigned.

To continue our forward progress we are working several areas that, at this time, have not been fully settled.

Capstone Program Plan Critical Items:

1. End-to-end Certification
   a. Avionics
   b. Ground System
   c. Micro-EARTS

2. Procedures Development
   a. Terminal
   b. En route (non-mountainous terrain, airspace designations

Avionics

- Price
- Certification
- Installation
- Capacity

Spectrum
- Frequency
- Availability

Connectivity
- Aircraft
- Ground
- Interoperability

Airspace
- Routes
- Approaches

Procedures
- Approaches
- SVFR
- Internet Dispatcher Access

Operator Acceptance
- Cultural Issues (enforcement, etc.)

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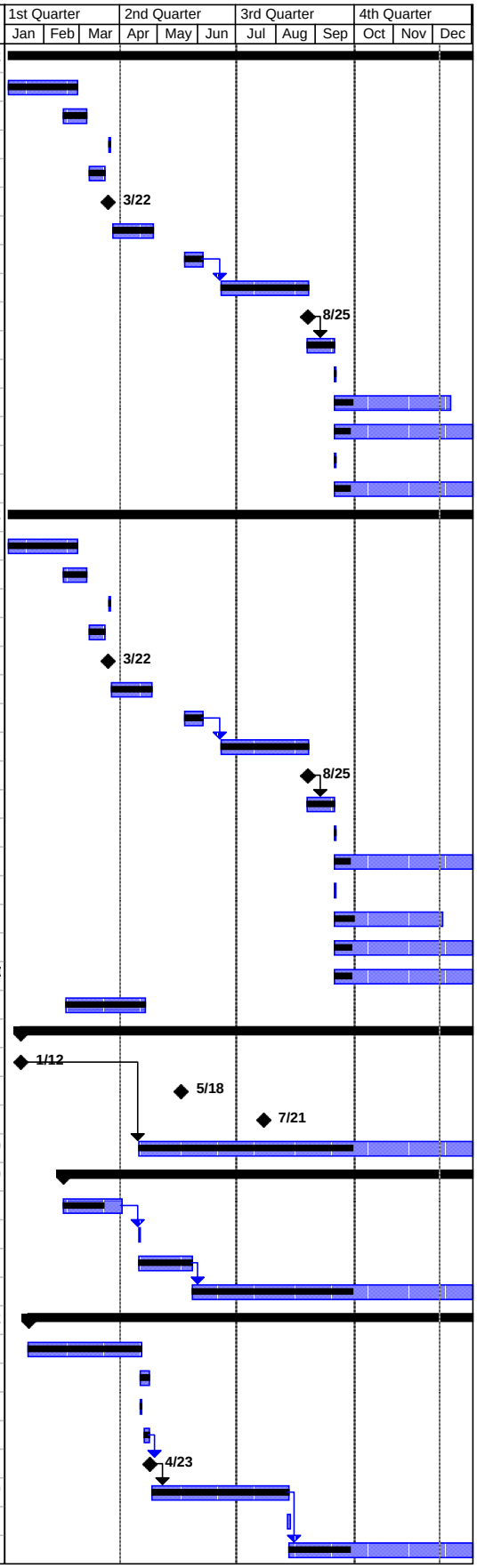
Capstone Timeline

ID	Task Name	Duration	Start	Finish
1	**Avionics**	**1042 days**	**Mon 1/4/99**	**Tue 12/31/02**
2	Develop/Review SOW	40 days	Mon 1/4/99	Fri 2/26/99
3	Develop RFO	15 days	Mon 2/15/99	Fri 3/5/99
4	Receipt of PR	1 day	Tue 3/23/99	Tue 3/23/99
5	Legal Review	10 days	Mon 3/8/99	Fri 3/19/99
6	Announcement	0 days	Mon 3/22/99	Mon 3/22/99
7	Solicitation Period	32 edays	Thu 3/25/99	Mon 4/26/99
8	Evaluate Offers/Discussion	10 days	Fri 5/21/99	Thu 6/3/99
9	Prepare Flight Demo	69 edays	Thu 6/17/99	Wed 8/25/99
10	Bethel Demo	0 days	Wed 8/25/99	Wed 8/25/99
11	Prepare Award/Congressional Notice	15 days	Wed 8/25/99	Tue 9/14/99
12	Award	1 day	Wed 9/15/99	Wed 9/15/99
13	Manufacture/Certification	90 edays	Wed 9/15/99	Tue 12/14/99
14	Performance	860 days	Wed 9/15/99	Tue 12/31/02
15	Order Units	1 day	Wed 9/15/99	Wed 9/15/99
16	Deliver first Units	120 edays	Wed 9/15/99	Thu 1/13/00
17	**Ground Equipment**	**1042 days**	**Mon 1/4/99**	**Tue 12/31/02**
18	Develop/Review SOW	40 days	Mon 1/4/99	Fri 2/26/99
19	Develop RFO	15 days	Mon 2/15/99	Fri 3/5/99
20	Receipt of PR	1 day	Tue 3/23/99	Tue 3/23/99
21	Legal Review	10 days	Mon 3/8/99	Fri 3/19/99
22	Announcement	0 days	Mon 3/22/99	Mon 3/22/99
23	Solicitation Period	32 edays	Thu 3/25/99	Mon 4/26/99
24	Evaluate Offers/Discussion	10 days	Fri 5/21/99	Thu 6/3/99
25	Prepare Flight Demo	69 edays	Thu 6/17/99	Wed 8/25/99
26	Bethel Demo	0 days	Wed 8/25/99	Wed 8/25/99
27	Prepare Award/Congressional Notice	15 days	Wed 8/25/99	Tue 9/14/99
28	Award	1 day	Wed 9/15/99	Wed 9/15/99
29	Performance	860 days	Wed 9/15/99	Tue 12/31/02
30	Order Ground Units	1 day	Wed 9/15/99	Wed 9/15/99
31	Deliver First Unit	60 days	Wed 9/15/99	Tue 12/7/99
32	DeliverSecond Unit	90 days	Wed 9/15/99	Tue 1/18/00
33	Deliver First Rack Mount Units	121 days	Wed 9/15/99	Wed 3/1/00
34	Evaluate MITRE Software	44 days	Wed 2/17/99	Mon 4/19/99
35	**MEARTS**	**406 days**	**Tue 1/12/99**	**Wed 8/2/00**
36	Purchase Modification	0 days	Tue 1/12/99	Tue 1/12/99
37	MEARTS BETA Demo	0 days	Tue 5/18/99	Tue 5/18/99
38	Bethel Demo	0 days	Wed 7/21/99	Wed 7/21/99
39	Certification	340 days	Thu 4/15/99	Wed 8/2/00
40	**Weather**	**447 days**	**Mon 2/15/99**	**Tue 10/31/00**
41	Site Surveys	34 days	Mon 2/15/99	Thu 4/1/99
42	Request for Bid	1 day	Thu 4/15/99	Thu 4/15/99
43	Contract Award	30 days	Thu 4/15/99	Wed 5/26/99
44	Site Intallations	374 days	Thu 5/27/99	Tue 10/31/00
45	**UAA**	**1010 days**	**Tue 1/19/99**	**Mon 12/2/02**
46	Develop/Review SOW	64 days	Tue 1/19/99	Fri 4/16/99
47	Develop RFO	6 days	Fri 4/16/99	Fri 4/23/99
48	Receipt of PR	1 day	Fri 4/16/99	Fri 4/16/99
49	Legal Review	5 days	Mon 4/19/99	Fri 4/23/99
50	Announcement	0 days	Fri 4/23/99	Fri 4/23/99
51	Prepare Award	76 days	Mon 4/26/99	Mon 8/9/99
52	Award	2 days	Mon 8/9/99	Tue 8/10/99
53	Performance	865 days	Tue 8/10/99	Mon 12/2/02



Spending Plan

Spend Plan	1Q 99	2Q 99	3Q 99	4Q 99	1Q 00	2Q 00	3Q 00	4Q 00	1Q 01	2Q 01	3Q 01	4Q 01	Totals
Avionics				$3.6M	$60K	$300K	$40K						**$4M**
MEARTS		$2.8M											**$2.8M**
Ground				$700K	$500K								**$1.2M**
FIS	$250K				$53K	$47K			$100K			$50K	**$.5M**
UAA					$500K								**$.5M**
MISC/SPO	$150K	$340K	$20K	$50K	$400K	$20K	$20K						**$1M**
AWOS		$30K	$620K	$350K									**$1M**
Totals	**$400K**	**$3.17M**	**$.640M**	**$4.7M**	**$1.513M**	**$.367M**	**$60K**		**$100K**			**$50K**	**$11M**
Travel	$7.5K	$26K	$9.5K	$57K									**$.1M**

Capstone Spend Plan:

a. 1Q 99: $250K of FIS and $150K of Misc/SPO (total $400K) was allowed to stay in Washington, DC to assist AND-470 in funding Datalink Analyses by John Hopkins University and a SETA contract position.

b. 2Q 99: $2.8M to fund Micro EARTS modification, $340K for starting up Capstone office and funding 2 NISC positions for 1 year, $30K for AWOS.

c. 3Q 99: $20K for operation of Capstone Program Office. $620K for AWOS.

d. 4Q 99: $3.4M obligated to purchasing 132 avionics equipment sets, simulator and training. $700K to AF for purchase of 6 ground stations, engineering and installation support. $50K for operation of Capstone Program Office. $350K for AWOS.

e. 1Q 00: $500K obligated to UAA to provide training and safety study for Capstone. $60K to install 10 avionics sets. $500K for ground stations. $53K loaned from FIS to ANI was AWOS. $400K lease of Capstone Office, 3 NISC positions and operations.

f. 2Q 00: $500K to install 105 avionics sets. $20K for Capstone Program Office operation. $47K lease of FIS data.

g. 3Q00: $40K install 35 avionics sets. $20K lease for Capstone Office operation.

h. 1Q 01: $100K lease of FIS.

i. 4Q 01: $50K for lease of FIS.

Status of Program Elements

Element 1. Aircraft Equipment Package

A. Coordinate and complete a Request For Information (RFI).	Completed
B. Coordinate and complete a Request For Offer (RF0).	Completed
C. Down select prospective vendor	Completed
D. Initial operational capability demonstration	Completed
E. Contract awarded	Completed
F. Install equipment	In Planning

Element 2. Obtain and Install Ground Infrastructure to Support ADS-B

A. Coordinate and complete a Request For Information (RFI).	Completed
B. Coordinate and evaluate purchase of a Mitre Ground Station.	Cancelled
C. Coordinate and complete a Request for Offer (RFO).	Completed
D. Down select prospective vendor	Completed
E. Initial operational capability demonstration	Completed
F. Contract awarded	Completed
G. Install Ground Stations	In Planning

Element 3. Micro-EARTS Adaptation

A. Procure modification to Micro-EARTS.	Completed
B. Conduct BETA Demo	Completed
C. Conduct design reviews	In Progress
D. Certification	In Planning

Element 4. Coordinate/Obtain/Implement Flight Information Services (FIS)

A. National contractor selection.	Completed
B. Select contractor	In Progress

Element 5. Train Capstone Participants

A. Complete statement of work.	Completed
B. Issue contract	Completed
C. Conduct Training	In Planning

Element 6. Obtain and Install Automated Weather Equipment

A. Select prospective sites	Completed
B. Perform site surveys	In Progress
C. Procure the automated weather equipment	Ordered
D. Install automated weather equipment	In Planning

Element 7 Conduct Safety and Human Factors Study

A. Complete statement of work.	Completed
B. Issue contract	Completed
C. Conduct Study	In Progress

Program Elements

1. Aircraft Equipment Package

Objective	Purpose
To equip up to 200 aircraft used by the commercial operators in the Yukon-Kuskokwim delta region of Alaska with a government-furnished Global Positioning System (GPS) based avionics package.	A significant number of mid-air collisions, controlled flight into terrain incidents, and weather-related accidents can be avoided with new technologies incorporated into the Capstone avionics package. The Alaskan Region's "Capstone Program" is an accelerated effort to improve aviation safety and efficiency through installation of government-furnished Global Positioning System (GPS)-based avionics and data link communications suites in most commercial aircraft serving the Yukon-Kuskokwim delta area. Capstone-equipped aircraft will be used initially to validate three of the nine high priority Free Flight Operational Enhancements requested by RTCA. • Flight Information Services (FIS) • Cost Effective Controlled Flight Into Terrain (CFIT) Avoidance • Enhanced See and Avoid The Capstone program will provide real world information and experience that will provide enhanced safety and operational capabilities.

Progress/Outcomes

A. Coordinate and complete a Request For Information (RFI).

Progress: - Completed

The Alaskan Region's Logistics Division published in the Commerce Business Daily a "Request for Information (RFI)." The RFI publicly announced to interested avionics vendors the FAA's proposed Capstone Program and requested submission of information on their products, services, and capabilities which are currently available, to meet the needs for the Capstone program. Information provided by the five vendors who responded will be considered as the FAA prepares performance specifications for Capstone Program avionics and ground transceiver equipment.

Progress/Outcomes - cont.

B. Coordinate and complete a Request for Offer (RFO)

Progress 1st Quarter: - In Progress

The Alaskan Region's Logistics Division in coordination with ACO, AND, AIR and the Industry Council is working to complete the RFO.

Progress 2nd Quarter: - Completed

The Alaskan Region's Logistics Division completed the RFO. The announcement was made on the internet March 22, 1999. The RFO will close April 26, 1999.

The Request for Proposals (RFP) for avionics suites will be published in hard copy controlled by the Logistics Division. Standard performance specifications common to the avionics industry are being utilized.

C. Down select prospective vendor

Progress 3rd Quarter: - Completed

The Avionics RFO closed April 26, 1999. UPS Aviation Technologies (formerly II Morrow, Inc), an Oregon based subsidiary of United Parcel Service was down selected. UPS AT will be required to produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in August 1999. Following a successful flight demonstration, a production contract will be awarded. The number of avionics suites purchased, up to a maximum of 200, will be based on the total available budget of $4 million. It is anticipated approximately 150 units will actually be procured.

Aircraft Equipment Package - cont.

Progress/Outcomes - cont.

D. Conduct Initial operational capability demonstration

Progress 3rd Quarter: - In Planning

An initial operational capability demonstration is scheduled for August 25, 1999. UPS AT will produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel Alaska.

Progress 4th Quarter: - Completed

An initial operational capability demonstration was completed on August 25, 1999. . UPS AT, using a company-owned Beechcraft King Air airplane and a specially equipped Cessna Model 208 Caravan furnished by PenAir, UPS AT, demonstrated that its proposed Global Positioning System (GPS) navigation unit, multi-function cockpit display (MFD), and datalink radio system would meet FAA performance specifications for the Capstone Program.

E. Award Contract

Progress: - Completed

A determination was made that FAA specifications were met and a contract was awarded on September 13th. The contract was for Capstone avionics systems, installation kits, terrain databases, ground-based transceivers, an avionics training simulator and training assistance.

F. Install Equipment

Progress 4th Quarter : - Awaiting delivery

2. Obtain and Install Ground Infrastructure to Support ADS-B

Objective	Purpose
To install ADS-B ground stations at up to twelve (12) locations in the Yukon-Kuskokwim delta region of Alaska	To provide enhanced see and avoid information each ADS-B equipped aircraft broadcasts its precise position in space via a digital datalink along with other data, including airspeed, altitude and whether the aircraft is turning, climbing or descending. This provides other aircraft, as well as ground facilities that have ADS-B equipment a much more accurate depiction of air traffic than radar can provide. To provide the digital datalink capability in a cost-effective manner requires the installation of ground based transceivers.

Progress/Outcomes

A. Coordinate and complete a Request For Information (RFI)

Progress : - Completed

The Alaskan Region's Logistics Division published in the Commerce Business Daily a "Request for Information (RFI)." The RFI publicly announced to interested avionics vendors the FAA's proposed Capstone Program and requested submission of information on their products, services, and capabilities which are currently available, to meet the needs for the Capstone program. Information provided by the five vendors who responded will be considered as the FAA prepares performance specifications for Capstone Program avionics and ground transceiver equipment.

B. Coordinate and evaluate purchase of a Mitre Ground Station.

Progress 2nd Quarter: - In Progress

The Alaskan Region Airway Facilities Division is in coordination with the SF21 office and Mitre/CAASD personnel regarding purchase of a Mitre ground station from the existing contract with IIMorrow for the Ohio Valley ground stations.

Progress 3rd Quarter: - On Hold

The purchase of the Mitre ground station is on hold. The proposed vendor ground station and datalink infrastructure may not require an additional Mitre ground station. A decision will be made after the August equipment demonstration in Bethel.

Progress/Outcomes - cont.

B. Coordinate and evaluate purchase of a Mitre Ground Station – cont.

Progress 4th Quarter: - Cancelled

The purchase of the Mitre ground station has been cancelled. The proposed vendor ground station and datalink infrastructure does not require an additional Mitre ground station.

C. Coordinate and complete a Request for Offer (RFO) for ground stations.

Progress 2nd Quarter: - Completed

The Alaskan Region's Logistics Division completed the RFO. The announcement was made on the internet March 22, 1999. The RFO will close April 26, 1999.

The Request for Proposals (RFP) for avionics suites will be published in hard copy controlled by the Logistics Division. After an initial bidding period, FAA will accept written proposals for evaluation. An independent team will then select the best apparent offer based on technical qualifications and cost considerations using previously documented objective selection criteria. The number of ground stations allowed to be purchased as a separate line item under the Avionics contract includes a minimum of 12 and maximum of 50 sets if the line item is exercised. The apparent successful vendor will be required to produce at least two sets of installed avionics (in aircraft provided by the manufacturer), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in July 1999. Following a successful demonstration, the decision to order ground stations from the Avionics vendor will be made. The Avionics RFP will include a delivery line item for data link ground stations compatible with the avionics. FAA may procure all necessary units from the vendor, or purchase some or all from another source, with cost being the primary consideration. Additional units beyond the 12 immediately required may be procured from the vendor if it is determined advantageous to FAA and if funds become available.

Progress/Outcomes - cont.

D. Down select prospective vendor.

Progress 3rd Quarter: - Completed

UPS Aviation Technologies (formerly II Morrow, Inc), an Oregon based subsidiary of United Parcel Service was down selected. UPS AT will be required to produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel, Alaska in August 1999. Following a successful flight demonstration, a production contract will be awarded. FAA may procure all necessary units from the vendor, or purchase some or all from another source, with cost being the primary consideration. Additional units beyond the 12 immediately required may be procured if it is determined advantageous to FAA and if funds become available.

E. Conduct initial operational capability demonstration.

Progress 3rd Quarter: - In Planning

The initial operational capability demonstration is planned for August 25, 1999. UPS AT will be required to produce at least two sets of installed avionics (in aircraft provided by UPS AT), a ground station, and related software to demonstrate operation of the proposed avionics system, in flight, at Bethel Alaska.

MITRE is teaming with the Alaskan Region to develop and configure an architecture and network for the Capstone program. The system will be based on the proven Ground Base Server developed by MITRE and tested on several though the Safe Flight 21 work with the CAA Ohio Valley project.

Progress 4th Quarter: - Completed

An initial operational capability demonstration was completed on August 25, 1999. UPS AT, using a company-owned Beechcraft King Air airplane and a specially equipped Cessna Model 208 Caravan furnished by PenAir, UPS AT, demonstrated that its proposed ground station system would meet FAA performance specifications for the Capstone Program.

Obtain and Install Ground Infrastructure to Support ADS-B - cont.

Progress/Outcomes - cont.

F. Award contract

Progress: - Imminent

After analyzing the data from the initial operational capability demonstration a determination was made that FAA specifications were met and a contract for the ground stations was awarded on September 13th

G. Install ground stations.

Progress 4th Quarter : - Awaiting delivery

3. Micro-EARTS Adaptation

Objective	Purpose
Adapt the Micro-EARTS at the Anchorage ARTCC to receive and process ADS-B position reports and fuse radar targets for display to air traffic controllers and pilots.	To allow pilots of Capstone-equipped aircraft to see radar targets for all nearby aircraft as well as ADS-B equipped aircraft position reports and radar targets via Traffic Information Service-Broadcast (TIS-B) for all nearby traffic on their multiple function display (MFD). The Micro-EARTS at the Anchorage ARTCC is being adapted to receive and process ADS-B position reports and fuse radar targets for display to air traffic controllers and pilots.

Progress/Outcomes

A. Procure and install modification to Micro-EARTS.

Progress 2nd Quarter: -In progress

A contract modification will be negotiated with Lockheed Martin for development of M-EARTS functions to support the Capstone Program. This principally includes display of ADS-B targets fused with radar targets and the capability to produce Traffic Information Service-Broadcast (TIS-B). Funding for this $2.8 million contract modification has already been transferred to Headquarters. A Beta Demonstration is planned for May 1999 with a demonstration planned for July 1999.

Progress 3rd Quarter: -Completed

Lockheed martin Corporation representatives installed the Capstone Micro-EARTS modification during April in preparation of the Beta-demonstration.

B. Conduct Beta Demonstration.

Progress 3rd Quarter: -Completed

The modification was successfully demonstrated during the week of April 19 and again on May 18-19. Radar targets were fused with ADS position reports and displayed on remote displays. Following testing, this capability is expected to reach Operational Readiness Demonstration by August 2000.

Micro-EARTS Adaptation - cont.

Progress/Outcomes - cont.

C. Design Reviews.

Progress 3rd Quarter: - In Planning

Preliminary Design Review (PDR) for the MEARTS modification is scheduled for July 19-23rd July.

Progress 4th Quarter: - In Progress

A Micro-EARTS Preliminary Design Review (PDR) at Anchorage ARTCC was completed during July. The Capstone modification to show ADS-B equipped aircraft on controller displays was discussed with Lockheed Martin representatives along with other software improvements. It will take about one year of testing before the ADS-B service can be certified for air traffic management functions.

D. Certification

Progress 3rd Quarter: - In Planning

Progress 4th Quarter: - In Progress

A meeting held in Salem Oregon, September 30th, 1999 resulted in a process to baseline and develop the Mitre software to be included in the certification process.

4. Coordinate/Obtain/Implement Flight Information Services (FIS)

Objective	Purpose
To work in conjunction with AND-700 to obtain and field FIS.	There is a significant amount of data in the National Airspace System that, if the pilot could have access to it in the cockpit, would make the flight safer through improved situational awareness (e.g., weather information) or more cost effective (e.g., knowledge of special use airspace restrictions). Without this information the pilot faces uncertain weather hazards and other operational inefficiencies. Capstone will use the Flight Information System (FIS) to receive current and forecasted weather and weather-related information as well as the status of SUAs. The enhanced weather products will be available to pilots and controllers, allowing them to share the same situational awareness. The information will be displayed graphically to the pilot. Expected benefits: increased availability of flight services, increased timeliness and quality of data on weather and system status, increased access to airspace, and reduced flight times and distance.

Progress/Outcomes

A. National contractor selection.

Progress 2nd Quarter: -In progress

FAA selection of a national contractor(s) is underway for delivery of FIS products to properly equipped aircraft via a data link system.

Progress 3rd Quarter: -In progress

FAA selection of a national contractor(s) is continuing. It appears that there will be a down select of two (2) service providers for the FISDL RFO by July 23,1999.

Progress 4th Quarter: - Completed

On July 28, 1999 ARNAV Systems, Incorporated and NavRadio Corporation were selected as the national Flight Information Services Data Link (FISDL) service providers by headquarters. We will be examining the products and services offered by these vendors to determine which might be suitable for the commercial operators in the Capstone service area

Coordinate/Obtain/Implement Flight Information Services (FIS) - cont.

Progress/Outcomes - cont.

B. Select Contractor

Progress 4th Quarter: - In Progress

We are currently reviewing the contracts of each FISDL service provider to determine the national vendor products and services to be used in the Capstone program.

5. Train Capstone Participants

Objective	Purpose
To ensure all participants in the Capstone program are properly trained on the Capstone avionics.	To ensure the Capstone avionics equipment is utilized properly and to the fullest to achieve the greatest benefit to enhanced safety and operational capabilities all participants must be trained.

Progress/Outcomes

A. Complete the statement of work.

Progress 2nd Quarter: - In Progress

The statement of work for training Capstone participants was delivered to the Alaskan Region's Logistics Division. The contracting officer is working with the Capstone office and the Regional Counsel Office to complete the training contract. It is anticipated that the contract will be awarded during the FY99 third quarter.

Progress 3rd Quarter: - Completed

The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be awarded during the FY99 fourth quarter.

B. Issue contract

Progress 3rd Quarter: - In Progress

The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be awarded during the FY99 fourth quarter.

Progress 4th Quarter: - Completed

The University of Alaska has been awarded a contract to deliver a pilot training program for the Capstone equipment and to conduct Capstone participant training.

Train Capstone Participants - cont.

Progress/Outcomes - cont.

C. Conduct training

Progress 4th Quarter: - In Planning

The University of Alaska is working with the Capstone office, UPS AT, Anchorage FSDO, Industry Council and the Bethel operators to develop the Capstone avionics training program. A beta training class is scheduled for 1st quarter FY00.

6. Obtain and Install Automated Weather Equipment

Objective	Purpose
To obtain and install Automated Weather Observing Equipment at up to 10 sites in the Capstone area.	To assist in providing weather information to accomplish IFR enroute and landings at Capstone area airports and to enable the use of the, up to eighteen, new GPS approaches requires current weather information be available. The weather observation equipment will meet at least the minimum functionality required by the Federal Aviation Regulations to support an instrument approach procedure for commercial operators. Weather sensors will provide the following observations: (a) wind speed, direction, and gusts; (b) altimeter setting; (c) temperature and dew point; (d) cloud height and sky cover; and (e) visibility. The equipment will provide an automatic radio broadcast of observations and have the capability to provide remote weather observations via a telephone line or connection to Service A.

Progress/Outcomes

A. Select prospective sites:

Progress 1st Quarter: - Completed

The Industry Council has selected the following ten (10) villages as prospective sites for installation of automated weather equipment; Kipnuk, Platinum, Scammon Bay, Holy Cross, Kwigillingok, Kalskag, Mountain Village, Russian Mission, St. Michael, and Koliganek.

B. Perform site surveys:

Progress 1st Quarter: - In Progress

ANI 700 has scheduled the site surveys at the ten sites. Scheduled completion date is during the second quarter FY99.

Progress 2nd Quarter: - In Progress

ANI 700 has completed 7 of 10 sites. The survey results will be used to install the automated weather equipment.

Automated Weather Equipment - cont.

Progress/Outcomes - cont.

B. Perform site surveys – cont.

Progress 4th Quarter: - In Progress

ANI 700 has completed 7 of 10 sites

C. Procure the automated weather equipment.

Progress 2nd Quarter: - In Progress

The preliminary strategy developed by the NAS Implementation Center, ANI-700, provides for procurement of 10 plastic equipment shelters under an existing government supply contract. ANI-700 plans to construct a prototype aluminum frame structure for support of weather sensors. Maintenance personnel in Anchorage will evaluate the frame, which will span the shelter, for field suitability and the design will be finalized. A competitive advertisement will next be issued to selected, pre-qualified, bidders. The contract will include procurement of FAA-certified aviation weather observation equipment of the type planned for "NEXWOS." The sensors required will be the minimum necessary to support Capstone flight operations. The selected turnkey contractor will be responsible for fabrication of the aluminum frames per the FAA design drawings, installation of weather equipment within the government-furnished plastic shelters, transportation of all shelters, frames, and equipment to the specified village airports, and for installation at the specified locations in accordance with FAA design drawings and specifications.

Progress 3rd Quarter: - Completed

The 10 plastic equipment shelters were purchased and shipped to Anchorage for retrofitting. Ten AWOS III facilities were purchased from Qualimetrics, Inc. The first item arrived and is being installed in a proto-type facility being constructed at the ANI Anchorage Complex.

Progress/Outcomes - cont.

D. Install Automated Weather Equipment

Progress 3rd Quarter: - In Progress

Four sites have been selected for installation before the end of FY99. They include Scammon Bay, Holy Cross, Mountain Village and St. Michael. Real estate and utilities coordination is ongoing.

Progress 4th Quarter: - In Progress

A proto-type facility for the Capstone automated weather observation equipment was constructed at the ANI Anchorage Complex. A "open house" was held at the Lake Hood property to inspect and "kick the tires" on the new weather station enclosure on Friday, September 9th . The materials and equipment will be shipped to Holy Cross in September 1999 to begin installation.

7. Conduct Safety and Human Factors Study

Objective	Purpose
To accomplish independent documentation, measurement, and reporting of the Capstone project.	A major "Capstone" objective is to improve safety in Alaska while offering efficiencies to operators. Key to the Capstones program's overall success is the need conduct an independent evaluation of system safety improvements and to document the user benefits.

Progress/Outcomes - cont.

A. Complete the statement of work and issue contract.

Progress 2nd Quarter: -In Progress

The statement of work for the safety study was delivered to the Alaskan Region's Logistics Division. The contracting officer is working with the Capstone office and the Regional Counsel Office to complete the contract. It is anticipated that the contract will be let during the third quarter.

Progress 3rd Quarter: - Completed

The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be led during the FY99 fourth quarter.

B. Issue contract

Progress 3rd Quarter: - In Progress

The contracting officer has issued the package to UAA and received their response. It is anticipated that the contract will be led during the FY99 fourth quarter.

Progress 4th Quarter: - Completed

The University of Alaska has been contracted to conduct an independent analysis of safety improvements related to the Capstone program.

Conduct Safety and Human Factors Study – cont.

Progress/Outcomes - cont.

C. Conduct Study

Progress 4th Quarter: - In Progress

The University of Alaska is in the process of gathering data to develop the baseline for the Capstone safety study.